CJM'S

SENTIENCE NEWSLETTER

SEARCHING FOR THE MOST COMPETENT ENTITY IN THE ROOM

Volume 1, Issue 8 December 2023

Another Year Shot

….putting myself into digital form

With more years behind me than ahead, I wonder if I'll survive long enough for a walking, talking avatar android? My descendants surely will.

Neurotechnology has witnessed remarkable progress in brain implants, which can record, decode, and even alter brain activity. Fueled by the integration of artificial intelligence (AI), we open new possibilities for individuals with neurological disorders in groundbreaking applications.

We continue to experience evolution ourselves. Genetic drift as random fluctuations in the frequencies of certain genes. Natural selection. when a genetic variant provides a reproductive advantage to individuals that carry it. AI help will be a new player in this evolution.

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In The News

Staying on top of the mess humans make of technology

At the top of the list, scientists created a computer with human brain tissue. This continues separate experiments conducted for over 20 years now, now these are finally yielding interesting results. Check out – https://www.msn.com/en-us/news/technology/biocomputing-breakthrough-scientists-create-living-brain-cells-that-can-recognize-speech/ar-AA1lrp05?ocid=msedgdhp&pc=U531&cvid=a1036371873c4bf586e55735f6b7a5ee&ei=87

…and in a study by Harvard biologists, new multicellular robots known as "Anthrobots"—derived from human tracheal cells—successfully healed a simulated "wound" in a laboratory setting. These biobots could play a big role in clearing arteries, repairing spinal cord damage, or providing valuable cancer-fighting data.

In Japan, scientists create mental images from human brains. The researchers used a "brain decoding" technology that translates brain activity into mental images of objects and landscapes. Check out Osaka Univ. and the National Institutes for Quantum Science.

A number of new AI have can reconstruct images a person saw based on their brain activity. Reading minds beyond body language will certainly give them both value and an edge over organic people.

…more news

University of Texas at Austin researchers have created a device called a semantic decoder that can read a person's mind by converting brain activity into a string of text. The authorities and spy agencies have to be drooling over this one. Medical people dealing with coma and paralyzed patients want it too.

In a study published in the journal Nature Neuroscience, the researchers described an A.I. that could translate the private thoughts of human subjects by analyzing fMRI scans, which measure the flow of blood to different regions in the brain. Like what spy agencies do to detect lies.

Already, researchers have developed language-decoding methods to pick up the attempted speech of people who have lost the ability to speak, and to allow paralyzed people to write while just thinking of writing. But the new language decoder is one of the first to not rely on implants.

It currently works at over 50% accuracy, which is climbing and already good enough to be useful.

OpenAI's latest communication to plug-in developers suggests a strategic shift towards GPTs, presenting them as a more user-friendly and versatile alternative to the previously favored ChatGPT plug-ins. The introduction of a GPT Store in the upcoming year is expected to replace the existing plug-in ecosystem, offering a streamlined and integrated approach to building applications.

Chris Melhuish of the Bristol Robotics Laboratory has repeated something I wrote about in Alive Be Deemed several years ago. He created robots that use bacteria-filled fuel cells to produce electricity from rotten apples and dead flies. The goal: robots that forage for their own food. I'm not so certain it is a good idea to have robots competing with us for food, as we all know how people in those situations react to each other.

Still, the biosphere is diverse and full of goodies!

…even more

A recent study, which was published in last month's edition of Neural Networks, demonstrated that AI is capable of producing images from human thought alone. What's more, these thought-generated images boast a 75 percent degree of accuracy.

It all started when human subjects were tasked with viewing 1,200 unique images while having their brain waves scanned in a functional magnetic resonance imaging (fMRI) machine.

After the scans were compiled, scientists used an AI program to create a score chart based on millions of data points like color, shape, and texture. With this reference point, a neural signal translator program was developed to document new brain activity as it was input based on memory recall.

Previous experiments involving mapping out brain waves with AI have less than 50 percent accurate, so this marks a significant improvement.

Subjects were then shown a new set of 1,200 images, and asked to recall the **images from memory** while having their brain waves scanned by an fMRI machine about an hour after viewing them.

In other words, AI was able to turn brain waves into pictures based on human memory alone.

Truthsayer robots attending presidential debates? Business and gov negotiations? How about what images we can glean from out pets, telling us how they really interpret their world.

I like the possibilities in all these areas. My only regret will likely not living long enough to see where it is all heading. Is Musk right that we will need brain-computer interfaces to keep up with them? Or are cyborgs the worst idea since 'New Coke'? Time will tell.

Papers & Tech Talk

Staying on top of how far technology has progressed

Quantum computing is poised to revolutionize our world as it matures. Its potential is immense — a quantum computer might complete, in just four minutes, what a traditional supercomputer would take 10,000 years to achieve. The key lies in developing the necessary chips. This week, IBM announced a significant advance, a 1,000-qubit quantum chip, the second largest ever created.

An AI has created other AI bots. While not as complex as itself, the idea of AI breeding new versions of themselves brings them one step closer to meeting the definition of a life form which has the ability to evolve, instead of relying on human invention and innovation. Check out –

https://www.msn.com/en-us/news/technology/large-ai-models-can-now-create-smaller-ai-tools-without-humans-and-train-them-like-a-big-brother-scientists-say/ar-AA1lBqBd?ocid=msedgdhp&pc=U531&cvid=c308913ef951414999b2630d722ebbb4&ei=52

Individual physical qubits, like rubidium atoms, are notoriously fragile and easily disturbed by interactions with their environment. To minimize errors, researchers entangle the atoms together to form a single "logical qubit," which can be combined with other logical qubits into a fault-tolerant quantum circuit. Check out –

https://www.msn.com/en-us/news/technology/researchers-create-first-programmable-logical-quantum-processor/ar-AA1lQKtL?ocid=msedgntp&cvid=1c8171b17d414956a55a085d1bbd74a5&ei=45

Robots & Androids

My robot of the month is **Little Sophia** (from Hanson) A 14" bot for kids. It is programmable and designed to teach kids. Unlike adults, it never gets tired of being asked questions, asked off-topic questions, and always gives the same answer no matter what crap is going on in its life – because this is its whole life. I look forward to a time when robot teachers pass human ones who missed their morning coffee or had a fight with their spouse or administrators. There is a place for human teachers, but not all the time.

Geminoid-DK is a realistic android designed for research into human-robot interaction. It's modeled after Danish professor Henrik Scharfe, who remotely operates the android as his robotic surrogate. I may like this one for my own android self!

The Japanese **Asimo** series has been added to with the **Asuma** advanced female android. Keep an eye on this one.

Orim-D robot café may provide employment for disabled people as remote control pilots. Demonstration of communication control technology that realizes natural remote control utilizing avatar robot "OriHime-D". Very cool. And when the AI mainframes are smart enough, they may pilot their own androids to walk in the world of men.

Murata Boy and **Murata Girl** are two self-balancing robots developed by Murata Manufacturing, a Japanese electronic components company. They showcase a range of their products for publicity. The robots are designed to be as energy-efficient as possible.

Grace, the ultra-lifelike nurse robot from Hanson Robotics continues to improve. At a time when nurses have some of the highest suicide rates and job attrition of any occupation, this is a welcome helpmate. Check out **Chira Kanai** who can interpret & communicate.

AI Community Leaders

Who is zooming who?

Cha Meeyoung, who is a data scientist in the team and at KAIST, notes: "The human brain is remarkable in how it operates with minimal energy, unlike the large AI models that need immense resources. Our work opens up new possibilities for low-cost, high-performance AI systems that learn and remember information like humans."

On a less positive note comes Meta's chief AI scientist Yann LeCun. He is skeptical that AI will reach human-level intelligence anytime soon. He explained that the most it will achieve in the near future is "dog-level" or "cat-level" intelligence. He previously said that AI hasn't been able to fully capture the human experience yet. He explained that because AI is trained on language, it can pass a lawyer's bar exam, but it can't unload a dishwasher like a 10-year-old human can. “Train a system on the equivalent of 20,000 years of reading material, and they still don't understand that if A is the same as B, then B is the same as A.” Personally I disagree: the error is comparing their intelligence to ours, like comparing people to dolphins. We will be sentient in different ways.

According to Science Alert, a new invention called Brainoware has successfully married brain tissue with electronics and produced a working computer.

Engineer Feng Guo of Indiana University Bloomington has observed this new brain-computer hybrid performing tasks such as speech recognition and math problems featuring nonlinear equation prediction with varying results. While the brain-computer was less accurate than a computer made of only non-organic chips running an AI program, it performed well enough to justify further experimentation.

Connect to an array of high-density microelectrodes through an artificial neural network is known as reservoir computing. It stimulates transport information into the organoid,

Very cool.

Robots In The Workforce

The blueprint of a novel firefighter robot, called the **Dragon Firefighter**, has been published in Frontiers in Robotics and AI as Open Science, so roboticists around the world may freely use the plans to build their own Dragons, for the benefit of all.

The prototype is a four-meter-long, remotely controllable **flying firehose robot**, engineered to safely and efficiently extinguish fires in buildings by directly approaching the fire sources, said joint corresponding author Dr. Yuichi Ambe, an assistant professor at Osaka University.

Slow but steady: The Mars robots, **Spirit and Opportunity**, have logged 10.5 miles trudging across the Red Planet for more than three years. The unstoppable droids were built to last 90 days. Leonardo da Vinci drew up plans for an armored humanoid machine in 1495. Now engineer Mark Rosheim has created a functional miniature version for NASA to help colonize Mars.

NASA's **Dragonfly mission**: the space agency will launch the car-sized craft, fitted with eight spinning rotors, to one of the most intriguing worlds in our solar system, Saturn's ocean- and dune-covered moon, Titan. It's a frigid realm where methane, not water, fills lakes and seas, and where the dunes are teeming with the organic ingredients needed for life to develop. Launch 2028 Arrive 2035. 3 years at Titan. 6 miles/day when flying in -290 Fahrenheit air. 450kg mass. Titan atmosphere density 4xEarth. 4000 meter max altitude. Runs experiments on the ground between charging from thermionic power.

And a new type of antibiotic **Halicin** has been found through AI. Meanwhile Australian researchers are trying to build a microrobot that would mimic the swim stroke used by E. coli bacteria to be injected into a patient so it could take a biopsy from the inside!

Tips for Civilians

…an AI out there might be just what you need

Microsoft Paint gets a must-try generative AI upgrade with **DALL-E 3** integration.

Microsoft Paint in Windows 11 now supports AI-generated images with DALL-E 3, a powerful image generation tool.

Users can access the DALL-E 3 image generation panel by clicking the "Cocreator" button, typing a prompt, and choosing an art style.

Each image generation costs one credit, with new users receiving 50 credits for free, but Microsoft has not yet revealed what happens when credits run out. Worth a try.

Generative AI is revolutionizing digital marketing by altering how we create, analyze and optimize marketing strategies. Gemini now comes in three versions: **Gemini Nano, Gemini Pro, and Gemini Ultra**. What sets Gemini apart from Google's current large language model PaLM 2, is its multimodal capability. It can learn from various sources to generate different types of data such as text, images, and code. This is a significant step up from Google's first-gen version announced in 2022.

Up to 64.7% of CMOs stated that they would use generative AI to create blogs, and 62.2% will use it for other website content, according to the Fall 2023 CMO Survey.

When using generative AI for new content, enter the process with strong ideas, specific examples and a unique perspective. The system writes the content, but you ensure its quality and value to the end user.

For experimenters out there, '**Project Ellmann**' builds on Gemini AI to create a story of your life from your stored photos, pets, children, eating habits, favorite websites, and more.

SHORTS & NOVELS

For a fine prophetic story on large questions, you must read Sirens of Titan by Vonnegut. Cannot recommend too highly if you think.

CALENDAR OF EVENTS

For a new year in 2024, it would be worthwhile to check online for all books signings, scifi conventions, and anime/comic conventions as these things change annually.

I will not be attending any in the states in 2024 as my current projects are taking all my attention.

For the same reason, I will be taking a sabbatical from writing this newsletter. I'm busy on the kind of things that are best not done while distracted by the fascinating advances being made monthly in the field of artificial intelligence.

I'll pick it up again as soon as I can, but until then, keep an eye out in the legitimate press for what's going on. No matter your occupation and especially if you have children, these developments affect you directly.

In my absence, may I recommend:

www.NASA.org
Frontiers in Robotics and A.I.
Science Alert
Journal of Nature Neuroscience
Neural Networks
SERVO Magazine

and of course,
IEEE Robotics and Automation Magazine

Science Fiction Writings of Charlie Marino:

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No price is too high to pay for the privilege of owning yourself. - Nietzsche

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